The standard for anticipation under 35 U.S.C. 102 is set forth in M.P.E.P. 2131:

> 'A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference.' *Verdegaal Bros. v. Union Oil Co. of California*, 814 F2.d 628, 631... 'The identical invention must be shown in as complete detail as is contained in the claim.' *Richardson v. Suzuki Motor Co.*, 868 F.2D 1226, 1236, 9 USPQ2d 1913,1920 (Fed. Cir. 1989)....

For anticipation under 35 USC 102, the reference must teach every aspect of the claimed invention either explicitly or implicitly. Any feature not directly taught must be inherently present.

As will be specifically pointed out below, the Examiner has failed to follow this clear directive for determining anticipation.

It is respectfully submitted that the Examiner pay attention to the examination standards for determination of obviousness. The Examiner's attention is drawn, in particular, to MPEP 706.02(j) and MPEP 2143 and the three basic criteria that must be set out to establish a prima facie case of obviousness.

The first criteria is that "**there must be some suggestion of motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.**"

"Second, there must be a reasonable expectation of success."

"Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success **must both be found in the prior art and not based on applicants disclosure.**" MPEP 2143 quoting *In re Vaeck*

MPEP 706.02(j) quotes *Ex Parte Clapp*: "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention, or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to be obvious in light of the teachings of the references."

MPEP 2143.01 clearly points out that the "level of skill in the art cannot be relied upon to provide the suggestion to combine references" *Al-Site Corp. v. VSI Int'l Inc.*

MPEP 2143.01 further provides the clear guidance that: "A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made' because the references relied

upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references." citing Ex *parte Levengood*

MPEP 2143.01 further clearly provides the guidance that the proposed modification of the prior art cannot change the principle of operation of the prior art reference.

The Examiner's attention is also directed to MPEP 2144.03 which clearly sets forth the standards, in accordance with *In re Zurko* and the other cases cited therein, for reliance on "well known" prior art. The Examiner's attention in particular is directed to 2144.03 C wherein "If applicant challenges a factual assertion as not properly officially noticed or ***not properly based upon common knowledge, the Examiner must support the finding with adequate evidence***."

THE EXAMINER HAS FAILED TO FOLLOW GRAHAM v JOHN DEERE

> "The factual inquiries set forth in Graham v. John Deere Co., 148 USPQ 459, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
> 1. Determining the scope and contents of the prior art.
> 2. Ascertaining the differences between the prior art and the claims at issue.
> 3. Resolving the level of ordinary skill in the pertinent art.
> 4. Considering objective evidence present in the application indicating obviousness or unobviousness."

It is respectfully submitted that the Examiner has failed to follow the factual inquiries set forth in Graham v John Deere.

1. It is inherent in these inquiries that the Examiner must have an evidentiary basis for the determinations made. The Examiner must consider each piece of prior art for what it fairly teaches within its four corners.
2. The Examiner provides inconsistent determinations between the teachings of the references and the rejections of the various claims. The totally inconsistent positions are a complete failure to ascertain the differences between the prior art and the claims.

In other aspects, the Examiner acknowledges the failure of the references to show or disclose significant aspects of the claimed invention. However, ***the Examiner without pointing to any reference and without providing any evidentiary affidavit makes pronouncements as to what is old and well known in the art.***

This is a complete failure to properly determine the differences between the prior art and the invention as claimed

3. The Examiner makes no effort to resolve the level of skill of one skilled in the EFT arts. The Examiner instead engages in convoluted logical explanations that things are old and well known in the art because they are obvious because the changes proposed

by the Examiner would have no effect on the systems involved. Such a convoluted approach fails on its face to resolve the level of skill of one skilled in the EFT arts.

4. The Examiner fails to consider objective evidence presented. The Examiner has chosen to ignore the specific discussions of what is taught in the references of record. This is made particularly clear by the Examiners vague, convoluted and non-responsive discussions in paragraph 10 of the office action.

THE EXAMINER HAS FAILED TO PROPERLY CONSIDER THE TEACHINGS OF THE REFERENCES.

A. '491 Patent

The crux of the Examiner's reliance on the '491 patent is based not upon the teachings of the '491 patent, but unwarranted speculation and unsupported interpretations of the teachings of the '491 patent and a complete disregard for evidence presented by Applicant.

There are three primary areas in which the Examiner fails to understand the plain teachings of the '491 patent.

A.1. Flexible Aluminum Composite Ski Pole

First, the '491 patent, which is directed to a ski pole, comprises a ski pole that is of an undefined flexible aluminum composite. The Examiner without any factual support takes the position that the aluminum composite pole, is an elongate thermal conductor.

However, as previously pointed out to the Examiner in the last two responses, but ignored by the Examiner, the '491 patent is absolutely silent on thermal conduction by the ski pole. The '491 patent is silent on the specific construction of the aluminum composite, except that it is a flexible aluminum composite.

The Examiner has not pointed to anything which supports his contention that a resilient aluminum composite is a thermally conductive member.

As pointed out in a prior response, **the definition of composite is "A structure or an entity made up of distinct components" (The American Heritage® Dictionary of the English Language: Fourth Edition. 2000).**

Aluminum composites are not inherently thermally conductive. To, the contrary, as previously pointed out in prior responses, a search of Google.com for aluminum composites reveals that **aluminum composites are typically multilayered structures with aluminum layers separated by Mylar or plastic or other thermal non conductors.**

The Examiner apparently recognizes this because he points to but does not specifically cite 6,077,327 to Hamayoshi et al as disclosing an aluminum composite with "good thermal dissipation characteristics."

The aluminum composite of the '327 patent is utilized in heat sinks. The aluminum composite of the '327 patent is silicon carbide powder and aluminum powder. The only applications specified for the aluminum composite are heat sink plates. The '327 patent is absolutely silent on whether the resulting plate is resilient.

It is however respectfully submitted that heat sinks and heat sink plates are typically not resilient, but to the contrary are rigid. Accordingly, **although the Examiner points to one example of an aluminum composite, that composite is not a resilient aluminum composite and the composite is inappropriate for use in ski poles.**

The '491 reference is absolutely silent on thermal conductivity of the ski pole. This is significant in view of the importance the inventors of the '491 patent attach to thermal issues with respect to the microprocessor as evidenced by the statements made at col. 4, lines 53-56. Accordingly, there is no basis in the prior art or in the teachings of the '491 patent that the resilient aluminum composite ski pole is thermally conductive.

Applicant specifically challenges the Examiners assertion that the flexible aluminum composite ski pole is an elongate thermally conductive member and applicant specifically requests that the Examiner provide evidentiary support for the Examiners assertion.

A.2. High intensity, high heat LEDs

Second, the Examiner without any factual or evidentiary support and contrary to evidence presented by Applicant has decided that the LEDs in the ski pole of the '491 patent are inherently high heat generating devices that require heat sinking by the ski pole.

The '491 patent is absolutely silent on any heat generation, heat conduction or heat sinking by or for the LEDs.

The Examiner's basis for wrongly asserting that the LEDs must be high heat generation devices is that the LEDs are described as "high intensity" LEDs.

The only description of "high intensity" LEDs found in the '491 patent are those referenced in conjunction with U.S. Patent 5,033,212 as previously pointed out to the Examiner.

The '212 patent, in turn, specifically refers to the "high intensity" LEDs as the now commercially unavailable LED part numbers MT5000UR and the Sharp LT-9512U.

Applicant has obtained and provided an IDS to the Examiner with data sheets for the MT5000UR and the Sharp LT-9512U. It is clear that the types of devices shown and

described in the '491 patent are either those identified above or equivalent devices. The Examiner assumed, without any factual basis and contrary to the plain language of the data sheets for the contemporaneous LED devices that the "high intensity" devices must also generate high amounts of heat. That simply was not and is not the case.

The Examiner has provided no factual basis that "high intensity" LED devices shown and referred to in the '491 patent are other than the LED devices described in the '212 patent.

Applicant specifically challenges the Examiners assertion that the "high intensity" LEDs of the '491 patent are high heat devices and applicant specifically requests that the Examiner provide evidentiary support for the Examiners assertion.

A.3. Carried On Said Elongate Member Outer Surface

Third, the Examiner without any factual or evidentiary support and contrary to evidence presented by Applicant has decided that the LEDs of the ski pole of the '491 patent are carried on the outer surface of the ski pole.

It is not understood how the Examiner can come to this conclusion unless he has not read '491 patent application or viewed the drawing figures of the '491 patent or read Applicants arguments.

As is clearly shown in FIGs 1 and 3, the ski pole has six led devices. The LED devices are inserted into "apertures" in the ski pole. As clearly shown in FIGs 1 and 3 each LED has a flange at its lower end. Each flange is larger than its corresponding aperture. Each flange engages the inner surface, not the outer surface of the ski pole. Accordingly, each LED is carried on the inner surface of the ski pole.

Applicant specifically challenges the Examiners assertion that the LEDs are carried on the outer surface of the ski pole and applicant specifically requests that the Examiner provide evidentiary support for the Examiners assertion.

Applicant also notes that the Examiner has constructed nonsensical examples of "carried" that are not consistent with the common English language meaning of "carry" or "carried."

The Examiner provides a definition of carry that does not support the Examiner's contention.

Provided herewith is the complete definition of "carry" which shows that one meaning as provided by a synonym is "support." The Examiner is requested to explain how the LEDs of the '491 patent are supported on the exterior surface of the ski pole of the '491 patent when each extends through an aperture in the outer surface of the ski pole and is clearly retained or supported on the interior surface by the flanges.

B. The '900 patent

The primary basis for the Examiner's reliance on the '900 patent is that the '900 patent suggests in one sentence at col. 3, lines 43-45 that the supporting frame of "good heat conduction material: "is adapted to construct as an elongated hollow member to reduce the overall weight of the light head 20."

At no point in the '900 patent is there any description or suggestion that the air that may be in a hollow member serves any part of the heat dissipation or that there is any transfer of heat to the air or fluid. To the contrary, since the purpose of the supporting frame is to transfer heat to the first and second heat dissipating ends and since the frame is of good heat conduction material, it may be fairly assumed that there is no significant heat transfer to the air.

As is clearly evident from the description and drawing, the heat generating LEDs are enclosed in the light projecting portion or lens 241 in all embodiments shown. The purpose of the structure is to conduct heat away from the LEDs contained in the light projecting portion 241 to the heat dissipating ends 211, 212 of the structure.

At no point in the '900 patent is there any discussion or suggestion that there is any heat transfer to any "fluid" or "air" that may be contained in the supporting frame 21.

The Examiner's approach that the heat is conducted to the air in the closed structure is not suggested or taught anywhere in the patent. The Examiner conveniently ignores the fundamental teachings of the '900 patent that the structure exists to conduct heat away from the LEDs to the heat dissipating ends 211, 212.

Applicant specifically challenges the Examiners assertion that in the '900 patent heat from the LEDs is conducted away from the LEDs to fluid contained by the supporting structure. Applicant specifically requests that the Examiner provide evidentiary support for the Examiners assertion.

The entirety of the teachings of the '900 patent is that the support structure is configured to conduct heat away from the LEDs to the dissipating ends of the support structure.

In contrast, in Applicant's claimed invention is directed to an "elongate thermally conductive member being configured to conduct heat away from said at least one solid state light source to fluid contained by said elongate thermally conductive member."

C. The '678 Patent

The primary basis for the Examiner's reliance on the '678 patent is substantially the same as it is for the '900 patent. Although the '900 patent is absolutely silent on conducting heat to fluid or air contained in the metal cylinder 35, and even though the Examiner admits that the cylinder is a heat sink, the Examiner asserts that heat is conducted away from the LEDs to fluid contained in the cylinder.

The entirety of the teachings of the '678 patent are directed to a structure that is configured to conduct heat generated from the LEDs via a metal cylinder to a metal base which dissipates the heat. As with the structure of the '900 patent, the light of the '678 patent is a closed structure in which the LED supporting metal cylinder is totally enclosed in a lamp structure which prevents air movement and accordingly requires that the heat be conducted outside the lamp structure.

Applicant specifically challenges the Examiners assertion that in the '678 patent heat from the LEDs is conducted away from the LEDs to fluid contained by the supporting structure. Applicant specifically requests that the Examiner provide evidentiary support for the Examiner's assertion.

D. The '517 Publication

The Examiner cites the '517 publication which is directed to an LED structure having an extruded heat sink with heat dissipation protrusions or channels and suggests that the ski pole of the '491 patent would be modified to include heat dissipation protrusions or channels as taught in the '517 patent.

It is a fundamental engineering principle that adding ribs to any elongate member will make that member more rigid or otherwise alter the mechanical characteristics of the elongate member.

It is also clear, that the resilient aluminum composite material of the '491 patent has not been disclosed. The Examiner has not set forth any prior art that suggests that all aluminum composites may be structured to include ribs or channels, in general, and has not pointed to any reference that would show how a flexible or resilient aluminum composite tube may be constructed as the Examiner suggests.

Applicant specifically challenges the Examiners assertion that there is any basis to modify the ski pole of the '491 patent to include heat dissipation ribs or channels. Applicant specifically requests that the Examiner provide evidentiary support for the Examiners assertion.

In addition, the Examiner, in an attempt to meet the claimed structures of Applicant's novel invention has proposed modifying the structures of the '900 and '678 patents to include ribs or channels as taught in the '517 publication. However, nothing in either the '900 or '678 patent suggests such a modification. Nor is there any apparent reason for modifying the structures of the primary references as suggested by the Examiner.

The Examiner's positions are not well founded

Applicant respectfully submits that the Examiner is not reading or responding to Applicant's specific written arguments. **Applicant also respectfully submits that the Examiner is providing unsupported statements of opinion without either providing factual bases for such statements of opinion or the affidavits that have been specifically requested.**

Applicant further respectfully submits that the Examiner's various positions with respect to the prior art are not well founded either technologically nor under established patent examining procedures as set forth above as found in the M.P.E.P.

The Examiner in the final office action at Section 10a. takes issue with Applicant's statements that the aluminum composite material of the '491 patent does not conduct heat. The Examiner does not address the issue of whether the structure of the '491 patent conducts heat or is a thermally conductive member, but rather makes the irrelevant statement that any material conducts heat to some degree and points to a heat sensor reference from Hukesflux that provides an overview of "thermal conductivity science." At no place in the reference pointed to by the Examiner is there any discussion of thermal conductors or insulators. Rather, the Examiner points to a listing of thermal conductivities and relies upon that listing to support the irrelevant point that all materials can be thermally conductive.

It is so elementary that it should not need to be said that just as some materials are classified as electrical conductors and electrical insulators, materials are classified as thermal conductors and thermal insulators. It is strongly suggested that the Examiner revisit basic principles of science and physics as taught in grade school and high school.

Attached hereto is a BBC reference for students ages 4-11 that discusses thermal insulators and thermal conductors. Many other such references are available.

If the position suggested by the Examiner is adopted as an examination standard, then any patent claim that recites conductor or insulator or conducting or insulating or any variations of the words is attackable on the basis that all materials exhibit electrical and thermal conductivity. **In short, and respectfully, the Examiner's stated position or observation is not well founded.**

The Examiner also fails to note that the Hukesflux article also specifically states that the conductivities set forth are for static conditions. The Examiner's notation that air has the poorest conductivity of the materials listed fails to note that is only the case for static conditions. It is suggested that the examiner consider that moving air is routinely used to enhance thermal dissipation. That is, of course, why fans are used in many applications to enhance the thermal dissipation.

The Examiner cannot ignore basic facts of science and technology in his analysis. The Examiner cannot also ignore what the references of record teach within their four corners nor what they are silent on.

The Examiner in contorted logic with respect to what the '491 patent teaches states:

> It should be emphasized, however, that even if thermal conductivity of the aluminum composite is less that (sic) that of air, the aluminum composite nevertheless conducts heat to some degree and thus it is still appropriate to state that the elongate thermally conductive member is configured or appears to be configured to conduct heat away from said at least one or (sic) said plurality of said solid-state light sources or from said radiation emitting semiconductor devices or from said radiation emitting solid-state devices to fluid naturally contained by said elongate thermally conductive member. Note also that the limitation "being configured" generally does not carry patentable weight in a claim unless the claim results in a structural difference as compared to a prior art device.

The Examiner without any basis in fact assumes that the undefined aluminum composite ski pole is a thermal conductor. The Examiner also chooses to ignore that the LEDs utilized in the '491 patent are of the type in which the entire device is encapsulated in epoxy. Epoxy is a known thermal and electrical insulator. To the extent that there is any thermal conduction (as distinguished from conductivity) through the epoxy to the aluminum composite, such thermal conduction would be insufficient to provide cooling for any device or to conduct heat away from the device. Thermal conductors provide paths of low thermal resistance and accordingly must have high thermal conductivity. Thermal insulators provide paths of high thermal resistance and accordingly have low thermal conductivity.

It is well known by any engineer of even minimal experience in the electronic arts that the primary conduction of heat from epoxy encapsulated components is not through the epoxy, but through the leads of the components. The leads are metal and as even grade school children know, metal is a heat conductor, epoxy is a heat insulator.

In the LEDs of the '491 patent, the epoxy provides low thermal conduction and acts as a thermal insulator. The electrical leads from the LEDs of the '491 patent provide high thermal conduction and are the thermal path via which the semiconductor junctions of the LEDs are cooled.

Accordingly, it is respectfully submitted that the Examiner is wrong. It is error to state:

> that the elongate thermally conductive member [of the '491 patent] is configured or appears to be configured to conduct heat away from said at least one or (sic) said plurality of said solid-state light sources or from said radiation emitting semiconductor devices or from said radiation emitting solid-state devices to fluid naturally contained by said elongate thermally conductive member.

10b. It is respectfully submitted that the Examiner's rejection of Applicant's arguments that the '491 patent's LED is not carried on the elongate thermally conductive member outer surface is similarly misplaced.

The Examiner states that:

the '491 patent's LED is carried on the elongate thermally conductive member outer surface as "carry" is interpreted to be 'To have (something) on the surface or skin[1].'" The fact that the LED 42 has a flange does not make it not carried on the outer surface of the elongate thermally conductive member 12.

Again, the Examiner's attention is directed to FIG. 3 of the '491 patent set forth below. **The Examiner is requested to specifically show how the LED 42 is carried on the outer surface of elongate thermally conductive member 12.** In other words, what "surface or skin" carries the LED 42?

It is not the flange that makes the LED 42 carried on the inner surface and not the outer surface of pole 12. The simple fact is that the ski pole has a hole through which the LED 42 is inserted. The flange on the LED 42 engages the inner surface of the pole. Because the flange engages the inner surface of the pole 12, LED 42 is of necessity carried on the inner surface of the pole even though it extends through the outer surface or skin.

The Examiner's attention is again directed to the complete definition of "carry" provided herewith along with the fact that a synonym for "carry" is "support" and the definition of "support" also provided herewith.

10c. It is respectfully submitted that the Examiner's analysis with respect to Applicant's arguments that the epoxy encapsulation of the LEDs of the '491 patent is again misplaced.

Where a device has two parallel thermally conductive paths, and one path is of high thermal conductivity, i.e., a good thermal conductor such as metal leads, and the other path is of very low thermal conductivity, i.e., a thermal insulator such as epoxy, heat is dissipated via the path of high thermal conductivity. In a science and engineering sense, the heat is conducted by the thermal conductor and not the thermal insulator. It is not the intent in this patent, nor is it the intent in similar patents to describe structures on a sub-atomic level which is what the Examiner is attempting to do by engaging in the analysis that he is utilizing.

The Examiner's attention is directed to the BBC reference provided herewith.

In addition, the Examiner wrongly states that:

> Applicant pointed to specific LED models disclosed in Patent 5,033,212, but those models **are not what is disclosed** or claimed by the '491 patent.

What Applicant stated was:

> "What the Examiner has failed to do, however, is note that the "high intensity" devices are identified in the '491 reference which was filed in 1998 where it states:

> A further teaching for increasing the visibility of an object is disclosed in U.S. Pat. No. 5,033,212, issued to Evanyk, which discloses high-intensity LEDS's mounted on or forming part of an object to be illuminated, in this instance an athletic shoe. An electrical circuit is operatively connected to the LED elements and is contained within a package that is attached to the shoe through the use of Velcro straps.

> The '212 patent which was filed in 1990 specifically identifies the "high intensity" LED devices as the now commercially unavailable LED part numbers MT5000UR and the Sharp LT-9512U.
>
> Applicant has attached with an IDS, the data sheets for the MT5000UR and the Sharp LT-9512U."

It is clear that the types of devices shown and described in the '491 patent are either those identified above or equivalent devices.

The Examiner is reminded that his misplaced logic previously presented was that the LED devices described in the '491 patent were "high intensity" devices and that the Examiner wrongly then assumed that the "high intensity" devices must also generate high amounts of heat. That simply was not the case as clearly evidenced by the LED devices that are contemporaneous with the '491 patent.

The Examiner has provided no factual basis that "high intensity" LED devices shown and referred to in the '491 patent are other than the LED devices described in the '212 patent.

10d. The Examiner rejects Applicant's arguments that the ski pole of the '491 patent does not show or teach "a cross section having flat portions." The Examiner, in his rejection states:

> In a cross-section view, the tube of the '491 patent, similar to the tube of the present invention, is seen as having a number of (continuously connected) flat portions.

Applicant has studied the '491 patent carefully. There is no cross-section view of the ski pole of the '491 patent that is provided in the patent that shows any flat portions. **The Examiner is specifically requested to point to the drawing in the '491 patent upon which he relies as showing "a number of flat portions."**

If what the Examiner is saying is the theoretical that a curve may be described as continuously connected infinitesimally small straight lines, then it is respectfully submitted that the Examiner's analysis is again flawed. References are to be considered for what they fairly teach. What the Examiner is doing is providing a "gloss" over the reference in order to change the teachings of the patent in order to cover applicant's invention. It is respectfully submitted that the Examiner cannot distort the plain teachings of the references.

10e. The Examiner does not fairly consider Applicant's arguments with respect to the '900 patent nor does the Examiner consider the plain teachings of the '900 patent.

The Examiner states that "the massive heat sink is optional and in one embodiment, the elongate thermally conductive member is hallow (sic)."

The Examiner mischaracterizes Applicant's statements where he states:

> As admitted by Applicant, the elongate thermally conductive member is of good heat conduction material; as such the heat generated from the LEDs dissipates equally to the air, inside and outside.

Applicant stated that the '900 patent describes the elongate thermally conductive member as being of good heat conduction material, but Applicant never stated that the "heat generated from LEDs dissipates equally to the air inside and outside." In fact, the Examiner has misrepresented Applicant's statement and **it is requested that the Examiner specifically withdraw the misrepresentation**.

The fact that the elongate thermally conductive member is of good heat conduction material is not relevant to dissipation to the air trapped inside the member. The static small amount of air trapped in the support structure provides virtually no heat dissipation.

The Examiner further states:

> On page 32, Applicant appears to indicated (sic) that the air in the hallow (sic) elongate thermally conductive member ('the support structure') is trapped in the totally enclosed support structure. However, that situation is not what is taught by the '900 patent. As noted above, the '900 patent simply teaches that the supporting frame can be hallow (sic), and that the heat sink is optional.

It is respectfully submitted that the Examiner cannot ignore the plain teachings of the '900 patent as he apparently is doing. As pointed out in the previous response by Applicant, the only place in the '900 patent is any mention made of the support structure being hollow is at col.3, where it is stated that the supporting frame may be hollow to reduce weight:

> According to the preferred embodiment, the supporting frame **21** which is made of good heat conduction material, is constructed to have an elongated solid member solidly extended from the first dissipating end **211** to the second dissipating end **212** so as to rigidly support the luminary unit **22** thereon. However, the supporting frame is adapted to construct as an elongated hollow member to reduce the overall weight of the light head **20**. Accordingly, the sup-

At no point is there any description or suggestion that the air that may be in a hollow member serves any part of the heat dissipation or that there is any transfer of heat to the

air or fluid. To the contrary, since the purpose of the supporting frame is to transfer heat to the first and second heat dissipating ends and since the frame is of good heat conduction material, it may be fairly assumed that there is no significant heat transfer to the air.

The Examiner is relying on this single sentence at col. 3, lines 43-45 in the '900 patent. The Examiner is reminded that he must take the entirety of the teachings of the '900 patent and that it is impermissible to only pick and chose those portions of the reference as will fit his specific analysis.

It is further respectfully submitted that **no enabling disclosure is provided in the '900 patent as** would support the Examiner's contention that heat is transferred to air trapped inside the frame.

The Examiner states that the '900 patent simply teaches that the heat sink is optional. **The Examiner is requested to point to that portion of the '900 patent where it is taught that the use of the heat sink is optional. There is no such teaching in the '900 patent. In fact, the entirety of the teaching of the '900 patent is that the heat sink is essential to the structure**.

10f. The Examiner also mischaracterizes Applicants arguments with respect to the '678 patent.

The Examiner states that the support "limitation" is not in the claim.

However, as previously pointed out:

> Claim 1 and the other rejected claims recite: "one or more electrical conductors carried by said elongate thermally conductive member and connected to said at least one solid state light source to supply electrical power thereto."
>
> The '678 patent fails to show or suggest that such a structure is provided. It is not inherent that power connections are carried by member 35.

To assist the Examiner, his attention is directed to the definition of "carry" and the identification that "support" is a synonym for "carry" filed herewith. The Examiner's attention is further directed to the definition of "support" attached hereto.

The Examiner is reminded that the rejection based on the '678 patent is a 35 USC 102 anticipation reference. Accordingly, each and every element of the claims rejected on that basis must be shown or taught by the reference.

The Examiner attempts to circumvent the simple requirements of "anticipation," not by pointing to any showing in the reference, but by a flawed analysis of that says since "the LEDs are carried by the cylinder and since the electrical conductors are connected to the LEDS, the electrical connectors (sic) are carried by the cylinder."

The Examiner, apparently forgetting his cited definition of "carry," decides to utilize "plenty of examples where 'carry' does nor require that the entirety of the object has to be on a surface of or embedded inside the object."

The Examiner then contrives two nonsensical examples to support his contention that only a portion of the conductors must be carried on the object.

The Examiner fails to point to any portion of any conductors that are carried by member 35 of the '678 patent. Where in the '678 patent is there any teaching or showing of any portion of one or more electrical conductors carried by an elongate thermally conductive member?

10g. The Examiner also fails to properly consider the teachings of the '678 patent with respect to heat conduction.

The Examiner states:

> it is respectfully pointed out that the '678 teaches that heat is conducted away from the LEDs to fluid (air) contained in member 35.

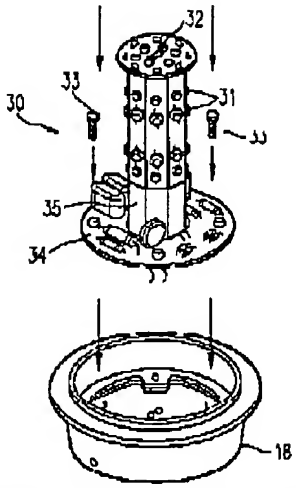
The Examiner is requested to point out with particularity where in the '678 patent is it shown, taught or suggested that heat is conducted from the LEDs to fluid contained in member 35.

There is no such teaching in the '678 patent.

The Examiner attempts to change the plain teachings of the '678 patent by stating that:

> ...the '678 reference does not have to explicitly teach or claim that heat generated by the LEDs are conducted to the air inside the metal cylinder 35, the heat generated by the LEDs are conducted to the air inside the metal cylinder 35, despite the fact that a portion of the heat generated by the LEDs might be conducted to the base 18 and that the two ends of the metal tubes are closed (sic).

There is no suggestion or teaching at any point in the '678 patent that heat is conducted away from the LEDs to fluid contained in member 35. Cylinder 35 is closed at both ends.



Printed circuit 32 clearly closes the top of the cylinder 35. The bottom of cylinder 35 is closed by circuit board 34 and/or base unit 18. **In addition, cylinder 35 is configured to transfer the heat not to the air, if any contained in cylinder 35 which is totally enclosed cylinder 35, but to the large metal base 18.** This is apparent from the unambiguous statements in the '678 patent as follows:
at Col. 3, line 16:

> The LED obstruction lamp **10** includes an optical lens **11** mounted on a base **18**. The base **18** is typically a metal casting for ruggedness, with good heat dissipation properties. The optical lens **11** houses LED elements as the

and at Col 3, line 51

> Further, the metal vertical cylinder **35** is specifically designed to be made of a metal which provides a heat sinking for the first plurality of LEDs **31**. It is important to provide a heat sinking for the high power LEDs **31** for maximizing life and minimizing light diminution.

Since the cylinder 35 is a heat sink and the base 18 has good heat dissipation properties, if is clearly evident that heat is transferred from cylinder 35 to base 18 where it is dissipated.

The Examiner has utilized the '678 patent as a basis for 35 U.S.C. 102 rejections of the claims. Accordingly, the Examiner is required to find some teaching in the reference that anticipates the novel structures of the rejected claims. The Examiner has failed to do so.

It is respectfully submitted that heat will always flow through the path of least thermal resistance, or stated in the converse, heat flows through the path of greatest thermal

conductivity. In this instance, the heat flows from the LEDs via cylinder 35 to heat dissipation base 18.

10h. The Examiner's rejection of the arguments presented by Applicant is unfounded.

The Examiner is again reminded that he must consider each reference for what it teaches within its four corners. The '491 patent does not show, teach or suggest at any place anything relative to heat generation by the LEDs, heat dissipation from the LEDs, heat conduction from the LEDs to the ski pole, heat conduction to the interior surface of the ski pole, or heat conduction to air contained in the ski pole. In short, the '491 reference is absolutely silent on any heat aspects relative to the LEDs. If the Examiner will carefully review the information provided relative to the "high intensity" LEDs described on the data sheets previously submitted, he will have to conclude that the term "high intensity" is disassociated with heat generation.

The Examiner has provided no factual basis for the undefined aluminum composite ski pole conducts heat better than surrounding air as he states.

Applicant's comments on the age of the reference only have to do with what is actually disclosed by the reference. The term "high intensity" used in the reference only has meaning when it is considered what is meant by "high intensity" at the time the disclosure of the reference was made.

The Examiner has not provided any basis to support his contention that the "high intensity" LEDs of the '491 patent generate high heat.

To the contrary, the Examiner has refused to consider evidence that has been presented by Applicant.

It is specifically requested that the Examiner provide factual evidence of what the composite aluminum ski pole of the '491 patent is actually constructed. It is specifically requested that the Examiner provide factual evidence of heat transfer from the LED devices of the '491 patent to the ski pole. It is further specifically requested that the Examiner provide factual evidence of how a composite aluminum ski pole conducts heat to air contained in the ski pole.

Applicant takes exception to the Examiner's dismissal of the argument that adding protrusions to the ski pole as suggested by the Examiner would reduce flexibility and therefore functionality of the ski pole. The Examiner dismisses this as Applicant's opinion.

It is not opinion, it is basic engineering fact that the addition of protrusions to an elongate member will reduce the flexibility of that member. An "I" beam is less flexible than a straight beam. The addition of flanges to a beam to form an "I" beam is a well known and fundamental way to make the beam more rigid. The same principle will apply to any elongate member.

10i. The Examiner mischaracterizes Applicant's argument with respect to the '900 patent. The Examiner has chosen to modify the member 21 to include heat dissipation protrusions or channels. However, one skilled in the art would not be motivated to do so because the clear teachings of the '900 patent are to provide a heat dissipating protrusions on heat dissipator 30. One skilled in the art would not be lead to modify the structure of the '900 patent as suggested by the Examiner, since the '900 patent teaches away from adding protrusions or channels on the member 21.

10j. The lamp structure of the '678 patent includes a cylinder 35 that is enclosed in a sealed housing. The addition of heat dissipating protrusions on a member that is enclosed in a sealed vessel does not aid in heat dissipation. Heat dissipation can only be enhanced if the housing is not sealed so that the air can move. As the Examiner has pointed out, air has low thermal conductivity. Accordingly, one skilled in the art would not modify the structure of the '678 patent as suggested by the Examiner.

10k. The Examiner attempts to refute Applicant's arguments through what can only be characterized as strange logic.

The Examiner states:

> it is respectfully submitted that the '678 patent does not disclose that the metal cylinder 35 is a polygon cross-section. **The metal member in FIG. 3 may look like a polygon**, but the reference discloses and claims a metal cylinder."

It is respectfully submitted that if the "metal member" looks like a polygon, it is absurd to state that the patent does not disclose that the cylinder 35 is a polygon.

FIG. 3 is the only drawing that shows an LED subassembly. That LED subassembly is clearly of polygon cross-section. No other LED subassembly is shown.

In addition, the Examiner had contended that the LEDs 31 could be mounted on a flexible printed circuit board to meet the structures claimed by Applicant. However, LEDs 31 are not described as being mounted on anything other than the sides of the metal cylinder 35. There is no discussion or teaching in the '678 patent that any printed circuit board is used for LEDs. The only printed circuit board referenced is board 34 for the carrying the drive circuitry.

The proposed modification of the structure of the '678 patent to include a printed circuit board where none is presently used radically changes the structure of the '678 patent and there is no suggestion that mounting "high power" LEDs as described in the '678 patent on a printed circuit board, flexible or not would achieve the heat dissipation presently provided by the structure shown and described.

In addition, the Examiner's rational that it is desirable to utilize a flexible printed circuit board because the "obstruction light" of the '678 patent is subjected to significant handling is factually incorrect.

The '678 patent clearly states that the "obstruction light may find use in and around airports, and may be placed on the top of jet blast fences, runway edges, towers, mountains, tall buildings, etc." (col. 1, lines 6-10)

The Examiner points to column 4, lines 36-40 as support of "significant handling." It is respectfully suggested that the Examiner read the cited passage. If anything, the cited passage teaches that obstruction lights are not subjected to significant handling. The cited "handling" is "wiring, installation, or removal." It is respectfully submitted that one does not "significantly handle" lights on the top of "jet blast fences, runway edges, towers, mountains, tall buildings, etc."

STATUS OF APPLICATION

Claims 1-63 are in the application as filed.

Claims 1-63 stand rejected.

1. Claims 1-3, 5, 7, 17, 22-24, 26, 28, 38, 43-45, 47, 49, and 59 stand "rejected under 35 U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent 6,152,491 ('491)."

2. Claims 1-3, 5-7, 11-17, 20-24, 26-28, 32-38, 41-45, 47-49, 53-59, and 62-63 stand "rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103 as obvious over Zhang U.S. Patent 6,715, 900 ('900)."

3. Claims 1-3, 5, 7, 17, 22-24, 26, 28, 38, 43-45, 47, 49, and 59 stand "rejected under 35 U.S.C. 102(e) as anticipated by Verds et al. U.S. Patent 6,425, 678."

4. Claims 4, 6, 8-13, 18, 25, 27, 29-34, 39, 46, 48, 50-55, and 60 stand "rejected under 35 U.S.C. 103 over the '491 patent as being obvious or in view of Kiraly et al. U.S. Published Patent Application 2003/0174517 ('517)."

5. Claims 4, 8-10, 18, 25, 29-31, 39, 46, 50-52, and 60 stand "rejected under 35 U.S.C. 103(a) as unpatentable over the '900 patent for being obvious or in view of the '517 publication."

6. Claims 4, 6, 8-13, 18, 25, 27, 29-34, 39, 46, 48, 50-55, and 60 stand "rejected under 35 U.S.C. 103 (a) as unpatentable over the '678 patent for being obvious or in view of the '517 publication."

7. Claim 14-16, 20-21, 35-37, 41-42, 56-58, and 62-63 stand "rejected under 35 U.S.C. 103 (a) as being unpatentable over the '678 patent in view of the '794 patent."

8. Claims 19, 40, and 61 stand rejected under 35 U.S.C. 103(a) "as being unpatentable over the '900 patent for being obvious."

9. Claims 19, 40, and 61 stand rejected under 35 U.S.C. 103(a) "as being unpatentable over the '678 patent for being obvious."

Although the responses set forth above in response to paragraph 10 of the office action traverse all of the rejections, because of the lengthy and detailed rejections provided by the Examiner, Each specific rejection of the claims will be responded to separately below. The numbering of paragraphs and sections below corresponds to the numbered sections in the office action.

1. **Claims 1-3, 5, 7, 17, 22-24, 26, 28, 38, 43-45, 47, 49, and 59 stand "rejected under 35 U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent 6,152,491 ('491)."**

It is respectfully submitted that the '491 patent does not anticipate or make obvious the novel structures of Applicant's invention as claimed.

The '491 patent is absolutely silent on what the distinct components are of the aluminum composite ski pole. **The '491 patent does not show or teach or suggest that the ski pole is used to conduct heat from the LEDs.** The '491 patent is absolutely silent on thermal conduction by the ski pole. The '491 patent is silent on the specific construction of the aluminum composite, except that it is a flexible aluminum composite. The '491 **patent is absolutely silent on transfer of heat from the LEDs**. It is respectfully submitted that **the Examiner's contention that the ski pole is a thermally conductive member finds no support in the '491 patent.** It can not therefore be concluded that the '491 patent either shows, teaches or makes obvious the novel structures of any of the claims in the application.

In addition, the disclosure of the '491 patent is absolutely silent on whether or not there is any thermally conductive coupling between the LEDs and the ski pole. As will be pointed out below, there is no thermal coupling between the LEDs and the ski pole and there is no thermal coupling from the LEDs to fluid contained in the ski pole.

Since there is no showing that the ski pole of the '491 patent is an elongate thermally conductive member and there is no showing of solid state devices or radiation emitting devices mounted on the external surface of an elongate thermally conductive device and there is no showing of thermal coupling between the LEDs and the ski pole, it can not be said that the '491 patent shows, teaches, suggests or anticipates the novel structures of claims 1-3, 5, 7, 17, 22-24, 26, 28, 38, 43-45, 47, 49, and 59. On these bases, the 35U.S.C. 102(b) rejection is traversed.

In addition, as will be shown below, the Examiners obviousness basis for rejection is likewise not supported by the reference.

With respect to the Examiner's rejection of claim 1 based on the '491 reference the Examiner states that the '491 reference teaches:

an elongate member (12, "internally hollowed, elongate and substantially cylindrical shaft 12 which is constructed of a strong, lightweight and resilient aluminum composite", column 3, lines 5-10) having an outer surface;

at least one solid-state light source (24, LED elements, paragraph bridging column 1 and 2) carried on said elongate member outer surface (as clearly depicted in Fig. 3; despite an aperture for receiving the solid-state light source, the solid-state light source is seen as being carried on said elongate member outer surface since the solid-state light source is not sunk below the elongate member outer surface); and

one or more electrical conductors (70, Fig. 2 or 84, Fig. 4) carried by said elongate member and connected to said at least one solid state light source to supply electrical power thereto.

Claim 1 recites, inter alia: "an elongate **thermally conductive member** having an outer surface"

The Examiner has not pointed to an elongate thermally conductive member but implies that the ski pole is such a member.

The Examiner notes that shaft 12 is a "resilient aluminum composite." However, the Examiner has not pointed to anything which supports his contention that a resilient aluminum composite is a thermally conductive member.

Aluminum composites are not inherently thermally conductive. To, the contrary, a search of Google.com for aluminum composites reveals that **aluminum composites are typically multilayered structures with aluminum layers separated by Mylar or plastic or other thermal non conductors.**

In addition, as pointed out in the last response, the definition of composite is "A structure or an entity made up of distinct components" (The American Heritage® Dictionary of the English Language: Fourth Edition. 2000).

The '491 reference is absolutely silent on thermal conductivity of the ski pole. This is significant in view of the importance the inventors of the '491 patent attach to thermal issues with respect to the microprocessor as evidenced by the statements made at col. 4, lines 53-56. **Accordingly, there is no basis in the prior art or in the teachings of the '491 patent that the resilient aluminum composite ski pole is thermally conductive.**

The Examiner apparently recognizes this because he points to but does not specifically cite 6,077,327 to Hamayoshi et al as disclosing an aluminum composite with "good thermal dissipation characteristics."

The aluminum composite of the '327 patent is utilized in heat sinks. The aluminum composite of the '327 patent is silicon carbide powder and aluminum powder. The only applications specified for the aluminum composite are heat sink plates. The '327 patent is absolutely silent on whether the resulting plate is resilient.

It is however respectfully submitted that heat sinks and heat sink plates are typically not resilient, but to the contrary are rigid. Accordingly, although the Examiner points to one example of an aluminum composite, that composite is not a resilient aluminum composite.

However, even if it assumed, for argument purposes, that the ski pole of the '491 patent is thermally conductive, the LED's are not mounted on the outer surface of the ski pole.

Claim 1, also recites: "at least one solid state light source carried on said elongate member outer surface."

The Examiner mischaracterizes what is shown in FIG.3. The Examiner is incorrect when he states the LED is carried on the outer surface. Contrary to what the Examiner states, it is abundantly clear from FIG. 3 that the LEDs 24, 26, 28, 30, 32, 34 extend through the ski pole 12 and are supported by the flange portions of each LED on the interior surface of the ski pole 12.

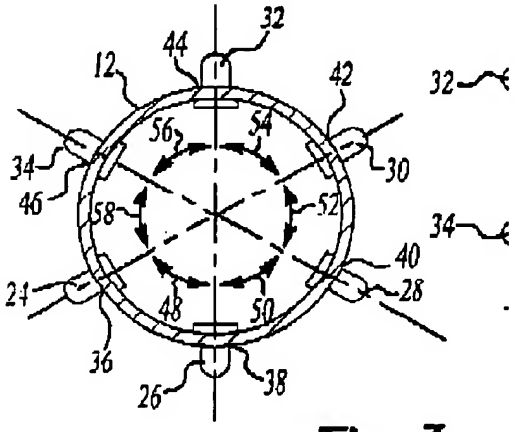
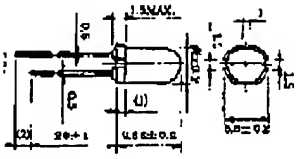


Fig-3

This is made further clear as discussed below when the Examiner considers that the LEDs utilized in the ski pole of the '491 patent have the following configuration:



Although the actual dimensions of the flange on the device are relatively smaller than show in the patent drawing, it is clear that the devices are flanged.

Applicant also points to the fact that the description in the '491 patent is absolutely silent on how the LEDs are mounted to the ski pole except that the LEDs are received in apertures in the pole (see col.3, lines 34-40). That teaching in combination with the fact that the LEDs are each shown as having a flange at its lower end clearly shows that the LEDs are supported on an interior surface of the ski pole. It is also respectfully submitted that since ski poles are subject to a significant amount of surface abuse, it would be preferable to secure the LED's on an interior surface rather than on the outer surface. Not only is it preferable, the specific devices utilized in the '491 patent are designed to be mounted by insertion into a hole from the back side of a wall.

Since there is no showing that the ski pole of the '491 patent is an elongate thermally conductive member and there is no showing of solid state devices or radiation emitting devices mounted on the external surface of an elongate thermally conductive device, it can not be said that the '491 patent shows, teaches or makes obvious the novel structures of claim 1.

Accordingly, it is respectfully submitted that the Examiner must withdraw the rejection under 35U.S.C. 102 and under 35U.S.C. 102.

With respect to claim 2, the Examiner states:

> Referring to claim 2 and using the same references, citations, and interpretations as detailed above for claim 1 where applicable, the '491 patent discloses a light source comprising:
>
> an elongate member having an outer surface;
>
> a plurality of solid-state light source (24, 26,...) carried on said elongate member outer surface, at least some of said solid-state light sources being disposed in a first plane and others of said solid-state light sources being disposed in a second plane not coextensive with said first plane; and
>
> electrical conductors carried by said elongate thermally conductive member and connected to said plurality of solid-state light sources to supply electrical power thereto.

As with claim 1, claim 2 recites: "an elongate thermally conductive member having an outer surface."

The '491 patent as pointed out above does not show, teach or even suggest a thermally conductive member.

Claim 2 further recites: "a plurality of solid state light sources carried on said elongate member outer surface..."

The '491 patent as pointed out above does not show, teach or describe carrying solid state light sources on the outer surface of the ski pole. To the contrary, the '491 patent teaches carrying the LED devices on the interior surface of the ski pole.

Accordingly, claim 2 is not shown, taught or made obvious by the '491 patent.

With respect to claims 22-23 and 43-44, the Examiner states:

semiconductor devices and a plurality of radiation emitting solid-state devices as claimed In particular, the reference discloses a radiation emitting source comprising:

an elongate member 12 having an outer surface;

a plurality of radiation emitting semiconductor devices 24, 26, ...or a plurality of radiation emitting solid-state devices 24, 26, .., carried on said elongate member outer surface, at least some of said radiation emitting semiconductor devices or said radiation emitting solid-state devices being disposed in a first plane and others of said radiation emitting semiconductor devices or said radiation emitting solid-state devices being disposed in a second plane not coextensive with said first plane; and

electrical conductors carried by said elongate member and connected to said radiation emitting semiconductor devices or said radiation emitting solid-state devices to supply electrical power thereto;

As with claims 1 and 2, the '491 reference is absolutely silent on the ski pole being a thermally conductive member.

In addition, as with claims 1 and 2, the '491 reference does not carry the LEDs on the outer surface of the ski pole.

Once again, the Examiner apparently agrees, because he then states:

However, the reference does not explicitly discloses that the elongate member is an elongate thermally conductive member as claimed, and thus further fails to explicitly disclose that the elongate member is configured to conduct heat away from said solid-state light sources or from said radiation emitting semiconductor devices or from said radiation emitting solid-state devices to fluid contained by said elongate member.

This interpretation of the teachings of the '491 patent is the opposite of the basis for the rejection of claims 1 and 2. The Examiner has now taken inconsistent positions as to what the '491 patent teaches. Such inconsistent positions, at a bare minimum, are an indication that the teachings of the '491 patent are so vague as to not teach anything with respect to thermal conductivity.

BY THE EXAMINER'S OWN STATEMENTS AS SET FORTH ABOVE AND REPEATED FROM THE PRIOR OFFICE ACTION, THERE CAN BE NO ANTICIPATION UNDER 35 USC 102 OF THE NOVEL STRUCTURES BASED UPON THE '491 PATENT.

The Examiner attempts to fill the void in the teachings of the '491 patent with an analysis that fails.

In an attempt to establish that it is inherent that the ski pole of the '491 patent must be thermally conductive, the Examiner states:

Nevertheless, the reference discloses that said solid-state light sources or said radiation emitting semiconductor devices or said radiation emitting solid-state devices are high intensity lighting devices (paragraph bridging columns 1 and 2), and high intensity lighting devices are associated with harmful high thermal dissipation as is known in the art (see, for example, Yamamoto et al. U.S. Patent 6,707,073, column 1, last paragraph), and harmful high thermal dissipation requires some sorts of cooling as is common knowledge and as is known in the art (see, for example, Kalua U.S. Patent Application Publication 2002/0122134, paragraph [0003] or, for example, Zhang U.S. Patent 6,715,900, column 1, lines 14-65). Therefore, the '491 patent's elongate member, which carriers the high intensity lighting devices, to function as disclosed appears to be an elongate thermally conductive member. In the alternative, it would have been obvious to one of ordinary skill in the art at the time the invention was made to change the '491 patent's elongate member so that it is an elongate thermally conductive member, so as to dissipate the harmful thermal energy released from the high intensity lighting devices

Thus, the Examiner's logic is that because the reference discloses that the ski pole utilizes "high intensity" devices, some sort of cooling is required and therefore the ski pole must be an elongate thermally conductive member. What the Examiner has failed to do, however, is note that the "high intensity" devices are identified in the '491 reference which was filed in 1998 where it states:

> A further teaching for increasing the visibility of an object is disclosed in U.S. Pat. No. 5,033,212, issued to Evanyk, which discloses high-intensity LEDS's mounted on or forming part of an object to be illuminated, in this instance an athletic shoe. An electrical circuit is operatively connected to the LED elements and is contained within a package that is attached to the shoe through the use of Velcro straps.

The '212 patent which was filed in 1990 specifically identifies the "high intensity" LED devices as the now commercially unavailable LED part numbers MT5000UR and the Sharp LT-9512U.

Applicant has attached with an IDS, the data sheets for the MT5000UR and the Sharp LT-9512U

The Examiner's attention is directed to that portion of page 1 of the MT5000UR data sheets that shows

FEATURES

- **Excellent on/off contrasts**
- **Low drive current**
- **High intensity red light emission**
- **Water clear lens**
- **Usage includes sign and scanning applications**

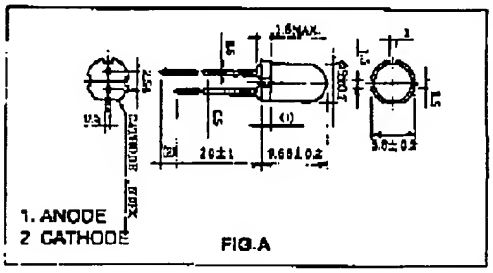


FIG.A

In particular the Examiner's attention is directed to the characterization of the device as having "***High intensity*** red light emission"

The Examiner's attention is also directed to the following portion of the spec. sheet:

MAXIMUM RATINGS (Ta = 25°C)

PART NO.	FORWARD CURRENT(I_F) (mA)	REVERSE VOLTAGE (V_R) (V)	POWER DISSIPATION (P_D) (mW)	OPERATING TEMPERATURE (T_{opr}) (°C)	STORAGE TEMPERATURE (T_{stg}) (°C)
Ultra Bright Red (UR)	60	4.0	125	-20~+85	-30~+100

The maximum power dissipation is 125 milliwatts.

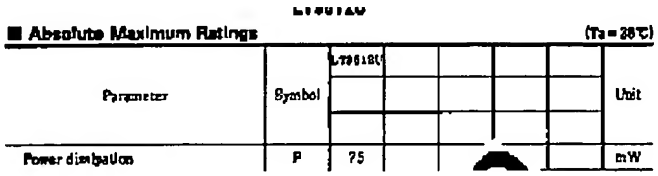
Next, the Examiner's attention is directed to the spec. sheets for the Sharp device which characterize the device as"

■ Features

1. Super-luminosity red LED lamp
2. φ10mm all resin mold
3. Colorless transparency lens type

It is clear that the term "super-luminosity" is synonymous with "high intensity"

The sharp device lists its absolute maximum power dissipation as 75 milliwatts



■ Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	LTP5181(					Unit
Power dissipation	P	75					mW

As the Examiner will surely appreciate, these maximum power dissipations are not significant power levels requiring any significant heat dissipation assistance. That is the reason why the '491 patent is absolutely silent on heat dissipation from the LEDs. It simply was neither a factor nor consideration.

IN OTHER WORDS, HIGH INTENSITY DOES NOT MEAN HIGH POWER IN THE CONTEXT OF THE '491 PATENT. INTENSITY ONLY HAS TO DO WITH LIGHT CHARACTERISTICS, NOT HEAT GENERATION.

Still further, the Examiner's attention is drawn to the fact that **both devices are encapsulated in resin. Resin is a poor thermal and electrical conductor.** Mounting of the devices in no way enhances heat dissipation from the devices. Heat was dissipated from these devices via the power leads extending from the LEDs. There is no way to transfer heat from the body of a resin encapsulated device except from its leads.

The Examiner's citation of other later filed and issued references is not appropriate, since he must take the '491 reference for what it fairly teaches including its stated selection and showing of specific LED devices.

It is suggested that the Examiner consider what the U.S. Supreme Court said in *Bischoff v Wethered*, 76 U.S.(1 Wall.) 812 (1869) in which the court discussed how the word "bridge" may mean significantly different things depending on the time period in question:

> "It does not follow that when a newly invented or discovered thing is called by some familiar word, which comes nearest to expressing the new idea, that the thing so styled is really the thing formerly meant by the familiar word."

The Examiner's pointing to later references in order to justify a position that the "high intensity" LEDs in the '491 patent would require high thermal dissipation distorts the plain teaching of the '491 patent. **The term "high intensity" as used with respect to LEDs in the 1990 time frame has nothing to do with thermal properties. The Examiner's logic is not appropriate. The entire basis for the Examiner's reliance on the '491 patent is fatally faulty.**

The Examiner, after improperly relying on a mischaracterization of the LEDs, enters in to a further faulty analysis of the "aluminum composite" ski pole. The Examiner states:

> As for the material of the '491 patent's elongate member, which is disclosed as "aluminum composite", although it is true that some special aluminum composites may be poor heat conductors; the aluminum composite of the '491 patent's elongate member ought to be a thermally conductive member so that the high intensity lighting elements - which produce harmful heat, which harmful heat needs to be dissipated - function as disclosed. For a disclosure of an aluminum composite with good thermal dissipation characteristics, see, for example, Hamayoshi et al. U.S. Patent 6,077,327, column 1, lines 5-67).
>
> Therefore, although not disclosed in so many words as detailed above, the elongate member of the reference's radiation source either inherently comprises or seems to comprise the limitation "thermally conduct" and that the elongate thermally conductive member is configured or appears to be configured to conduct heat away from said at least one or said plurality of said solid-state light sources or from said radiation emitting semiconductor devices or from said radiation emitting solid-state devices to fluid naturally contained by said elongate thermally conductive member

The '491 patent does not at any place describe or suggest that the ski pole is thermally conductive. The description of the ski pole shaft is found at col.3, lines 5-10 where it is stated:

> the preferred embodiment of the present invention. The ski pole preferably includes an internally hollowed, elongate and substantially cylindrical shaft 12 which is constructed of a strong, lightweight and resilient aluminum composite as is desirous in the art. The shaft 12 terminates at a first upper

Thus the reference describes the pole as a resilient aluminum composite. There is no other description of the properties of the ski pole shaft. Of particular significance is that the Examiner has chosen to focus only on the portion of the description of the pole as

being an aluminum composite and fails to consider that the shaft is a resilient aluminum composite.

It is respectfully submitted that the Examiner points to a reference that teaches an aluminum composite that is appropriate for use in heat sinks, but there is no teaching or suggestion in the Hamoyshi patent that the composite resulting from mixing silicon carbide and aluminum powder or granules is appropriate for any other function. At no point in the Hamoyshi patent is there any suggestion that the composite produce form subjecting a mixture of silicon carbide and aluminum power can be even formed into poles, much less producing a "resilient aluminum composite." Again, the Examiner is reminded that he must take each reference for what it fairly teaches. There is no teaching that the aluminum composite utilized as a heat sink is a resilient aluminum composite.

Thus the Examiner's position that somehow it is inherent in the '491 patent that the ski pole is a thermally conductive member is not supported by the plain teachings of the references that the Examiner points to.

In addition, the Examiner is reminded that the subject of the '491 patent is a ski pole. Ski poles are utilized in ambient temperatures that are typically below freezing as contracted with temperatures that are typically encountered with LED lighting. The ambient temperature alone that ski poles are utilized in mitigates the use for any heat dissipation.

For the same reasons that claims 1 and 2 are not shown, taught or made obvious by the '491 patent and for the additional reasons set forth above, claims 22-23 and 43-44 are not shown, taught or made obvious by the '491 patent taken singly or in combination with the references pointed to by the Examiner.

With respect to claims 3, 17, 24, 38, 45 and 59, the Examiner states:

> Referring to claims 3, 17, 24, 38, 45, and 59, the internally hollowed, elongate and substantially cylindrical shaft 12 of the '491 patent inherently comprises air, which is a thermal transfer media, since the reference fails to disclose otherwise.

For the same reasons set forth above that claims 1, 2, 22-23, and 43-44 are not shown, taught or made obvious by the '491 patent, claims 3, 17, 24, 38, 45 and 59 are not shown, taught or made obvious by the '491 patent.

With respect to claims 5, 26 and 47, the Examiner states:

> Referring to claims 5, 26, and 47, the internally hollowed, elongate and substantially cylindrical shaft 12 of the '491 patent comprises a tube.

For the same reasons set forth above that claims 1, 2, 22-23, and 43-44 are not shown, taught or made obvious by the '491 patent, claims 5, 26, and 47 are not shown, taught or made obvious by the '491 patent.

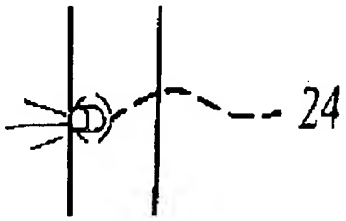
With respect to claims 7, 28, and 49, the Examiner states:

> Referring to claims 7, 28, and 49, the '491 patent further discloses in Figure 3 that said tube has a cross-section having flat portions.

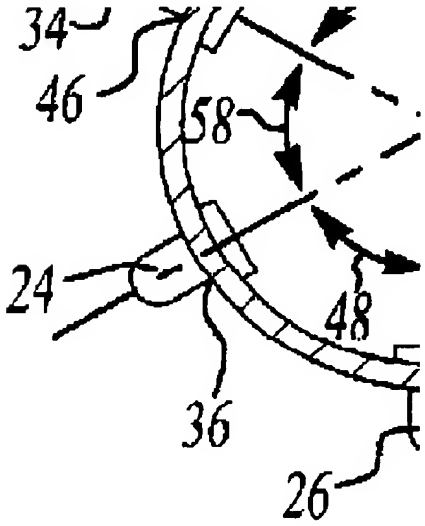
For the same reasons set forth above that claims 1, 2, 22-23, and 43-44 are not shown, taught or made obvious by the '491 patent, claims 7, 28 and 49 are not shown, taught or made obvious by the '491 patent.

In addition, the Examiner does not appreciate that the ski pole does not have flat portions.

The Examiner's attention is drawn to FIG.1, a portion of which is shown below and FIG. 3 a portion of which is also shown below.



FLANGE PORTION OF LED 24



It is believed that the Examiner has misread FIG. 3 and has interpreted the rectangular flat portions of the LEDs as being flat parts of the ski pole. However, when FIG. 1 is

viewed with FIG. 3, it is clearly apparent that the "flat" portions are really the flanged bottom of the LEDs. This is further evident if the Examiner considers that the ski pole is shown in cross section, cross hatching, whereas the flat flanges of the LEDs are not in cross section as evidenced by a lack of cross hatching.

For this additional reason, claim 7, 28, and 49 are not shown, taught or made obvious by the '491 reference.

2. Claims 1-3, 5-7, 11-17, 20-24, 26-28, 32-38, 41-45, 47-49, 53-59, and 62-63 stand "rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103 as obvious over Zhang U.S. Patent 6,715, 900 ('900)."

Turning now to the Examiner's rejections based on Zhang U.S. Patent 6,715,900 (the '900 patent"), the Examiner states:

> Referring to claim 1, the '900 patent discloses a light source comprising:
>
> an elongate thermally conductive member ("supporting frame" 21, made of a good heat conduction material, column 3, lines 38-39) having an outer surface ("peripheral surface" 213, column 3, lines 30-32);
>
> at least one solid-state light source ("high efficiency solid-state light source", column 1, lines 4-10, or "luminary element" 222, column 3, lines 30-35) carried on said elongate member outer surface (best seen in Figs. 2 and 4); and
>
> one or more electrical conductors ("electrodes" 220, best seen in Figs. 1 and 4) carried by said elongate member and connected to said at least one solid-state light source to supply electrical power thereto ("carried by" in interpreted broadly).

The Examiner in discussing claim 2 and claims 22-23 and 43-44 points to similar structure. in the '900 patent. The Examiner then states at page 10:

The reference further discloses that the elongate member is configured to conduct heat away from said solid-state light sources or from said radiation emitting semiconductor devices or from said radiation emitting solid-state devices, with the aid of an optional heat dissipation member 30 (note that heat dissipation member is not a requirement as evident by the disclosures in column 5, first paragraph, column 6, lines 38-44, or by the claimed invention of claim 1), but does not explicitly discloses that said heat removing away from said solid-state light sources or from said radiation emitting semiconductor devices or from said radiation emitting solid-state devices is to transfer the heat to fluid contained by said elongate member as claimed.

The Examiner is correct in his analysis that the '900 patent does not teach transfer of heat to fluid contained by the elongate member. On this basis alone, the '900 patent does not anticipate the novel structures of the rejected claims.

However, the Examiner then in an attempt to meet the claimed structure of applicant's claimed invention states:

Nevertheless, the reference discloses that said elongate thermally conductive member 21 could be an elongate hallow member (column 3, lines 42-47). As such, the elongate hallow thermally conductive member must contain a fluid (air) since the reference fails to disclose that the elongate hallow thermally conductive member is devoid of air (i.e., the reference fails to disclose efforts to remove the naturally occurring air in the elongate hallow thermally conductive member). Since the fluid (air) is naturally present in this embodiment, this embodiment discloses or appears to disclose that the elongate thermally conductive member is configured to conduct heat away from said at least one or said plurality of said solid-state light sources or from said radiation emitting semiconductor devices or from said radiation emitting solid-state devices to naturally occurring fluid (air) contained by said elongate thermally conductive member.

However, the Examiner's analysis ignores the plain teachings of the '900 patent. The entirety of the teaching of the disclosure of the '900 patent is directed to the transfer of heat from the LEDs to the ends of the support member 21 and from the ends of support member 21 to a massive heat sink.

Col. 2 of the '900 patent clearly indicates that the object of the invention is to provide a supporting frame to which is mounted a heat dissipating member. The supporting frame has good heat conductivity to transfer the heat to the heat dissipating member.

> Another object of the present invention is to provide a light source arrangement, which comprises a heat dissipating member mounted to the supporting frame having good heat conductivity, in such a manner that the heat dissipating member can highly increase the cooling effect of the light source arrangement to vanish the heat from the light head through the supporting frame so as to prolong the service life span thereof.

This is further emphasized in the summary of the invention at Col 2 where it is stated that the objects of the invention are fulfilled by a structure described as:

> a light head, comprising:
> a supporting frame having first dissipating end, an opposed second dissipating end, and a peripheral surface provided between the first and second dissipating ends; and

At Col 3, the structure is described, in part, as having a first dissipating end, a second dissipating end and a peripheral surface between the two heat dissipating ends:

> The light head **20** comprises a supporting frame **21** having first dissipating end **211**, an opposed second dissipating end **212**, and a peripheral surface **213** provided between the first and second dissipating ends **211, 212**, and a luminary unit **22** comprising a circuit board **221** provided on the peripheral

The supporting frame 21 is described as preferably being solid at col.3, but may be hollow to reduce weight:

> According to the preferred embodiment, the supporting frame **21** which is made of good heat conduction material, is constructed to have an elongated solid member solidly extended from the first dissipating end **211** to the second dissipating end **212** so as to rigidly support the luminary unit **22** thereon. However, the supporting frame is adapted to construct as an elongated hollow member to reduce the overall weight of the light head **20**. Accordingly, the sup-

At no point is there any description or suggestion that the air that may be in a hollow member serves any part of the heat dissipation or that there is any transfer of heat to the air or fluid. To the contrary, since the purpose of the supporting frame is to transfer heat to the first and second heat dissipating ends and since the

frame is of good heat conduction material, it may be fairly assumed that there is no significant heat transfer to the air.

This becomes clearly evident at col. 4 where the transfer of heat via the heat dissipating ends is further described:

> Since the first and second heat dissipating ends **211, 212** of the supporting frame **21** are exposed outside without sealedly covering by the light shelter **24**, the heat generated by the luminary element **222** can be effectively dissipated at the first and second heat dissipating ends **211, 212** of the supporting frame **21**.

At col. 5 it is made clear that the heat dissipation is performed by a separate member, a heat dissipating member that is coupled to one of the heat dissipating ends:

> According to the preferred embodiment, the light source arrangement further comprises a heat dissipating member **30** mounted to the second dissipating end **212** of the supporting frame **21** to dissipate heat generated from the light head **20**. As shown in FIG. **1**, the second dissipating end **212** of the supporting frame **21** is embodied as a heat sink connector **210** to securely connect with the heat dissipating member **30** so as to directly distribute the heat from the light head **20** to the heat dissipating member **30**.

At col. 5, beginning at line 24, it is again made clear that the heat dissipation is provided by the external heat dissipating member 30.

> light head **20**. Due to the structure of the heat dissipating blades **33**, the contacting surface of the heat dissipating member **30** will be substantially increased to effectively dissipate the heat from the light head **20**.

In fact, it is further emphasized that heat is transferred from the support structure 21 to the heat dissipater 30 at col. 5, beginning at line 29:

> As shown in FIG. **1**, the heat sink connector **210** having a cog-liked cross sectional is fittedly inserted into the head socket **311** having the corresponding shaped so as to substantially increase the contacting surface area between the light head **20** and the heat dissipating member **30** for further enhancing the heat transfer from the light head **20** to the heat dissipating member **30**. Moreover, the cog-like cross sectional heat sink connector **210** is adapted to prevent an unwanted rotational movement of the light head **20** with respect to the heat dissipating member **30** when the heat sink connector **210** is engaged with the heat dissipating member **30**.
>
> It is worth mentioning that when the light head **20** is

From the foregoing portions of the '900 patent, it is clear that the supporting frame serves to transfer heat from the LEDs to the end portions of the support frame 21 of light head 20. Whether the support frame is solid or hollow is not significant in the context of the invention described. The heat is not transferred from the LEDs to air or fluid contained in the supporting frame 21. The support frame 21 is utilized to conduct heat to the dissipating member 30 and not to fluid or air contained in support frame 21.

As is well known in the art of heat transfer, heat will conduct via the path of least thermal resistance. Air is of higher of higher thermal resistance than metal. In the totally enclosed hollow support frame structure 21, heat is transferred to the ends of the structure for dissipation via a heat dissipater 30.

The Examiner's contention that trapped air in the totally enclosed support structure 21 provides for heat transfer from the LEDs is not supported from the description of the structures in the '900 patent. It is respectfully submitted **that there can be no effective heat transfer to air that may be trapped in the small volume presented by the enclosed hollow structure that is only merely suggested in one line of this reference and is at no other place in the reference described.**

In contrast to the structure that is shown and described in the'900 patent, Applicant's novel structures presents in each and every claim that:

> "said elongate thermally conductive member being configured to conduct heat away from said at least one solid state light source to fluid contained by said elongate thermally conductive member"

, or similar language.

The structure of the '900 patent does not show, teach or suggest such a structure. In fact, the '900 patent teaches away from the present invention by requiring that a separate heat dissipater be provided to conduct the heat away.

Accordingly, none of the claims in the application are shown, taught or made obvious by the '900 patent.

3. Claims 1-3, 5, 7, 17, 22-24, 26, 28, 38, 43-45, 47, 49, and 59 stand "rejected under 35 U.S.C. 102(e) as anticipated by Verds et al. U.S. Patent 6,425, 678."

Turning now to the Examiner's rejection of claims based on the Verdes et al U.S. Patent 6,425,678 under 35U.S.C. 102(e) , the Examiner states that the '678 patent does not show or teach or describe one or more electrical conductors carried by the elongate thermally conductive member:

one or more electrical conductors (not shown, but must be present for the LEDs, which require electrical power to function, to function) carried ("carried" is interpreted broadly or as broadly as the claims) by said elongate thermally conductive member and connected to said at least one solid-state light source to supply electrical power thereto; and

Although the LEDs of the '678 patent must be connected to a power source, there are any number of ways that the electrical connections may be made. What is shown and described is that the LED drive circuitry is carried on a printed circuit board 31 that is at the bottom of the metal cylinder 35. The Electrical connections to the LEDs are carried by the circuit board 31 and apparently extend upward through the hollow cylinder 35 and connect to the LEDs. In any event, the Examiner must take the reference for what it fairly teaches or does not teach. The reference does not show or teach that electrical conductors for powering the LEDs are carried by the cylinder 35. On this basis alone, the Examiner's rejection of all claims is traversed for failing to anticipate the invention as required under 35 U.S.C. 102(e).

The Examiner then continues to change the plain teachings of the '678 reference when he states:

said elongate thermally conductive member being configured to conduct heat away from said at least one solid-state light source (as noted above) to fluid contained by said elongate thermally conductive member (the elongate thermally conductive member 35 must be hallow to accept the LEDs 31 and the inherent electrical conductors, which are hidden from the view of Fig. 3, the must-be-hallow elongate thermally conductive member must contain fluid (air) therein since the reference does not disclose otherwise (i.e., no attempts are disclosed to deliberately make the inside of the hollow elongate thermally conductive member a vacuum, i.e., no air).

At no point in the '678 reference is there any indication as to what is or what is not in the cylinder 35. The Examiner's statement that the cylinder must be hollow to accept the LEDs 31 is contrary to the teachings of the '678 patent, which states at Col. 3:

The internal illuminating unit **30** includes a first plurality of LEDs **31** mounted on the sides of a metal vertical cylinder **35**. The LEDs **31** are specifically chosen to be high power

In addition, the reference is absolutely silent on how the electrical connections are made to the LEDs. It is not inherent that the conductors are supported by the cylinder or are enclosed in the cylinder. To the extent that wires are provided, they may be vertical

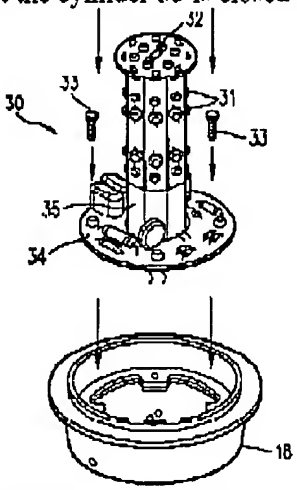
wires that are supported by base 18 either through the cylinder or outside the cylinder. The reference fails to show or suggest how the LEDs are powered.

Claim 1 and the other rejected claims recite: "one or more electrical conductors carried by said elongate thermally conductive member and connected to said at least one solid state light source to supply electrical power thereto."

The '678 patent fails to show or suggest that such a structure is provided. It is not inherent that power connections are carried by member 35.

Accordingly, the '678 patent does not show, disclose or suggest the structure as claimed.

More importantly, there is no suggestion or teaching that heat is conducted away from the LEDs to fluid contained in member 35. What the Examiner again fails to appreciate is that the cylinder 35 is closed at both ends.



Printed circuit 32 clearly closes the top of the cylinder 35. The bottom of cylinder 35 is closed by circuit board 34 and/or base unit 18. In addition, cylinder 35 is configured to transfer the heat not to the air, if any contained in cylinder 35 which is totally enclosed cylinder 35, but to the large metal base 18. This is apparent from the unambiguous statements in the '678 patent as follows:
at Col. 3, line 16:

> The LED obstruction lamp **10** includes an optical lens **11** mounted on a base **18**. The base **18** is typically a metal casting for ruggedness, with good heat dissipation properties. The optical lens **11** houses LED elements as the

and at Col 3, line 51

Further, the metal vertical cylinder **35** is specifically designed to be made of a metal which provides a heat sinking for the first plurality of LEDs **31**. It is important to provide a heat sinking for the high power LEDs **31** for maximizing life and minimizing light diminution. 55

Since the cylinder 35 is a heat sink and the base 18 has good heat dissipation properties, if is clearly evident that heat is transferred from cylinder 35 to base 18 where it is dissipated.

It is respectfully submitted that heat will always flow through the path of least thermal resistance, or stated in the converse, heat flows through the path of greatest thermal conductivity. In this instance, the heat flows from the LEDs via cylinder 35 to heat dissipation base 18.

Thus it is evident that the '678 patent fails to show or teach an "elongate thermally conductive member being configured to conduct heat away from said at least one solid state light source to fluid contained by said elongate thermally conductive member." Rather, the '678 patent shows a thermally conductive member 35 configured to conduct heat to a metal casting 18.

Accordingly, since each of the rejected claims contains the foregoing limitation, with slight variations, the '678 patent does not show, teach, suggest or make obvious the novel structures of applicant's claimed invention for this additional reason.

4. Claims 4, 6, 8-13, 18, 25, 27, 29-34, 39, 46, 48, 50-55, and 60 stand "rejected under 35 U.S.C. 103 over the '491 patent as being obvious or in view of Kiraly et al. U.S. Published Patent Application 2003/0174517 ('517)."

It is respectfully submitted that the Examiner has failed to follow the factual inquiries set forth in *Graham v. John Deere Co* and on this basis it is requested that the Examiner withdraw this rejection.

The Examiner points to the '517 publication as teaching heat dissipation protrusions or channels. However, the '491 patent does not show, teach or make obvious the base claims from which these claims depend. Since the base claims are not shown, taught or made obvious, the addition of heat dissipation protrusions or channels does not render the by these dependent claims does not render the claimed structures obvious.

However, change to the elongated thermally conductive member (aluminum composite tube) 12 to include heat dissipation protrusions or channels for thermal transfer would have been obvious for at least one of the following two reasons;

(1) It is known that increasing surface of or adding channels to a thermal dissipating device would increase the thermal dissipating capabilities of the device and it is known that high intensity light sources would require some form of thermal dissipating. Hence it follows that, at the time the invention was made, one of ordinary skill in the art would recognize that adding protrusions or channels to the elongated thermally conductive member (aluminum composite tube) 12 would increase the surface area of the device and/or thermal dynamics, which in turn would increase the thermal dissipating capabilities of the device, which in turn would help with thermal dissipating of high solid-state high intensity sources - which would require some form of thermal dissipation - carried by the elongated thermally conductive member (aluminum composite tube) 12; and

However, the Examiner fails to appreciate that the '491 patent is silent on providing any thermal dissipation. The Examiner fails to appreciate that at no point in the'491 patent is there even a remote suggestion that the ski pole is utilized as a thermally conductive member. The Examiner fails to appreciate that a high intensity LED in the 1990 era was not a high power device that would require some form of thermal dissipation. The Examiner's choice of a particular aluminum composite which is not disclosed or suggested in the'491 patent fails to meet the specific stated requirements of the aluminum composite that are set forth in the '491 patent. The composite selected by the Examiner is not resilient. The Examiner also fails to consider that the LEDs of the '491 patent are not carried on the outer surface of the ski pole, but as clearly pointed out above are carried on an interior surface of the ski pole.

The Examiner fails to consider that the ski pole is resilient. The addition of protrusions to the ski pole would reduce any resiliency that the ski pole might have, and in all likelihood would render the ski pole useless as a ski pole. The addition of channels to the ski pole of the '491 patent would most likely weaken the ski pole so as to make it unusable.

There is not even the remotest suggestion in the '491 patent that heat dissipation is a problem. There is not even the remotest suggestion in the '491 patent that it is desirable to add protrusions or channels to the ski pole for any purpose. There is absolutely no teaching or suggestion in the '517 publication that a ski pole should have protrusions or channels added thereto.

It is respectfully submitted that one skilled in the art would not be lead to add protrusions or channels to a ski pole to dissipate heat. There is no suggestion in any of the references cited by the Examiner that heat dissipation is any problem in ski poles, lighted or unlighted. There is absolutely no motivation for one skilled in the art to provide a ski pole structure as suggested by the Examiner.

The second reason for modifying the '491 patent is that:

> (2) The '517 publication, in disclosing an extensible linear light emitting diode illumination source comprising aluminum base 28, PCB base 10, and high intensity LED array 12, teaches that modifying aluminum base 28 to include extrusions ("extruded aluminum") would increase thermal dissipation ("for maximum heat dissipation") (paragraph [0034]) and to include channels (30) for cooling the illumination sources (12) (Abstract and paragraph [0013]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to change the high-intensity-LED-carrying elongated thermally conductive member (aluminum composite tube) 12 of the '491 patent to include aluminum extrusions and channels or aluminum composite extrusions and channels. One would have been motivated to make such a modification in view of the suggestion in the '517 publication that aluminum base 28 including extrusions or channels would increase thermal dissipation.

However, once again the stated reason is no reason whatsoever in view of the fact that the '491 reference is absolutely silent on any thermal problems with the LEDs carried by the ski pole. One skilled in the art would not have been motivated to modify the ski pole or the '491 patent as suggested by the Examiner because heat dissipation was not an issue with the low power dissipation devices utilized in the ski pole as described in detail above.

Since all the claims rejected under 35 U.S.C. 103 in view of the '491 patent and the '517 publication depend from base claims that are not shown, taught or made obvious by the '491 patent, the addition of the teachings of the '517 publication to cover specific features added in the rejected claims does not make the claimed structures obvious.

For the reasons set forth with respect to the base claims, and the additional reasons set forth above, none of claims 4, 6, 8-13, 18, 25, 27, 29-34, 39, 46, 48, 50-55 and 60 are made obvious by the combination of the '491 patent in view of the '517 publication.

5. Claims 4, 8-10, 18, 25, 29-31, 39, 46, 50-52, and 60 stand "rejected under 35 U.S.C. 103(a) as unpatentable over the '900 patent for being obvious or in view of the '517 publication."

It is respectfully submitted that the Examiner has failed to follow the factual inquiries set forth in *Graham v. John Deere Co* and on this basis it is requested that the Examiner withdraw this rejection.

This rejection is based on the '900 patent in view of the '517 publication.

Each of these claims depend from base claims that are not shown, taught or made obvious over the '900 patent and for the same reasons that the base claims are not shown, taught or made obvious by the '900 patent, these claims that add additional limitations are not shown, taught or made obvious by the '900 patent modified in accordance with the '517 publication.

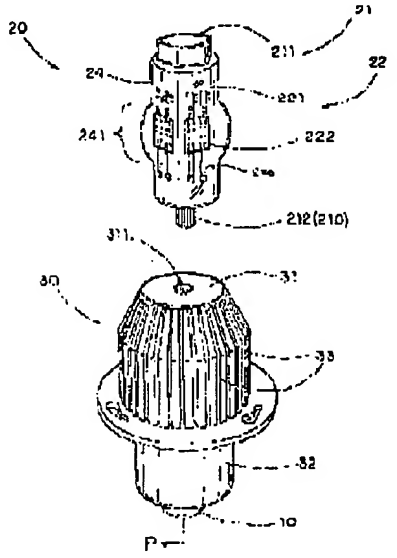
The Examiner concedes that the '900 patent does not disclose the added structural elements of these claims:

> The '900 patent discloses in one embodiment a device as claimed and as detailed above including elongated hallow thermally conductive member 21 carrying on its outer surface solid-state radiation emitting device 31 but fails to disclose that the elongated thermally conductive member comprises heat dissipation protrusions or channels for thermal transfer.

However, in an attempt to meet the structural limitations set forth in the claims, the Examiner states:

> (1) It is known that increasing surface of or adding channels to a thermal dissipating device would increase the thermal dissipating capabilities of the device and it is known that high efficiency solid-state light sources with enhanced brightness and increased cooling effect (column 1, lines 5-10) would require effective thermal dissipating. Hence it follows that, at the time the invention was made, one of ordinary skill in the art would recognize that adding protrusions or channels to the elongated thermally conductive member would increase the surface area of the device and/or thermal dynamics, which in turn would increase the thermal dissipating capabilities of the device, which in turn would help with thermal dissipating of high efficiency solid-state light sources; and

The Examiner ignores the teachings of the '900 patent. The plain reason that the '900 patent does not have heat dissipation protrusions or channels on member 21 is that the function of member 21 is not to dissipate heat, but to transfer heat from the LEDs to the heat dissipater 30. Heat dissipater 30 includes heat dissipation protrusions and channels 33 as shown below. The Examiner's suggested change to the structure of the '900 patent would not be recognized by one skilled in the art, because the function of member 21 is not to dissipate heat, but to transfer heat to heat dissipater 30. Member 21 is a closed cylinder and adding protrusions or channels would not increase heat dissipation.



The Examiner states that:

(2) The '517 publication, in disclosing an extensible linear light emitting diode illumination source comprising aluminum base 28, PCB base 10, and high intensity LED array 12, teaches that modifying aluminum base 28 to include extrusions ("extruded aluminum") would increase thermal dissipation ("for maximum heat dissipation") (paragraph [0034]) and to include channels (30) for cooling the illumination sources (12) (Abstract and paragraph [0013]).

However, the Examiner's suggestion that because the '517 publication teaches an aluminum base with extrusions, ignores the fact that the '900 patent already has a base with such extrusions as shown above.

The Examiner's basis for the suggestion is

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to change the high-power-LED-carrying elongated thermally conductive member of the '491 patent to include aluminum (or other metal) extrusions and channels. One would have been motivated to make such a modification in view of the teachings in the '517 publication that a metal base including extrusions or channels would increase thermal dissipation.

However, as pointed out above, there is no motivation to modify the structure of the '900 patent since it already includes heat dissipation protrusions on a base as taught by the '517 publication.

Accordingly, for this additional reason, the structure of the rejected claims is not shown, taught, or made obvious by the '900 patent and the '517 publication taken singly or in combination.

9. **Claims 4, 6, 8-13, 18, 25, 27, 29-34, 39, 46, 48, 50-55, and 60 stand "rejected under 35 U.S.C. 103 (a) as unpatentable over the '678 patent for being obvious or in view of the '517 publication."**

It is respectfully submitted that the Examiner has failed to follow the factual inquiries set forth in *Graham v. John Deere Co* and on this basis it is requested that the Examiner withdraw this rejection.

Each of these claims depends from a base claim that is not shown, taught or made obvious by the '678 patent. Each of these claims adds additional limitations to the base claims and the '517 publication is cited only for the limitations added. Accordingly, none of these claims is shown, taught or made obvious by the '678 patent in combination with the '517 publication.

The Examiner states that it would be obvious to modify the structure of the '678 patent to include heat dissipation protrusions or channels as taught by the '517 publication. The Examiner sets forth two reasons for modifying the structure of the '678 patent. The first reason stated is:

(1) It is known that increasing surface of or adding channels to a thermal dissipating device would increase the thermal dissipating capabilities of the device and it is known that high power light sources would require some form of thermal dissipating. Hence it follows that, at the time the invention was made, one of ordinary skill in the art would recognize that adding protrusions or channels to the elongated thermally conductive member would increase the surface area of the device and/or thermal dynamics, which in turn would increase the thermal dissipating capabilities of the device, which in turn would help with thermal dissipating of high power light sources; and

However, as shown and described above, support cylinder 35 is provided to conduct heat to the base 18 which in turn is utilized to dissipate the heat generated by the LEDs. As also pointed out above, cylinder 35 is closed off at its top and bottom thereby preventing air flow and resulting in no effect heat transfer to air or any other fluid that may be contained in the cylinder 35. In addition, the entire lamp assembly is sealed within a lens that is clamped to the base 18. One skilled in the art would not be lead to adding heat dissipation elements to the interior of a closed cylinder where the heat transfer of the structure as designed is intended to transfer heat to a separate base unit. Accordingly, one skilled in the art would not be lead to modify the lamp of the '678 patent as the Examiner suggests.

The second stated reason is:

(2) The '517 publication, in disclosing an extensible linear light emitting diode illumination source comprising aluminum base 28, PCB base 10, and high intensity LED array 12, teaches that modifying aluminum base 28 to include extrusions ("extruded aluminum") would increase thermal dissipation ("for maximum heat dissipation") (paragraph [0034]) and to include channels (30) for cooling the illumination sources (12) (Abstract and paragraph [0013]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to change the high-power-LED-carrying elongated thermally conductive member of the '491 patent to include aluminum (or other metal) extrusions and channels. One would have been motivated to make such a modification in view of the teachings in the '517 publication that a metal base including extrusions or channels would increase thermal dissipation.

It is respectfully submitted that one skilled in the art, recognizing having both references in front of him might be lead to add heat dissipation protrusions and/or channels to the heat dissipation portion of the lamp of the '678 patent. The heat dissipation portion of the '678 patent is the base 18.

> The LED obstruction lamp **10** includes an optical lens **11** mounted on a base **18**. The base **18** is typically a metal casting for ruggedness, with good heat dissipation properties. The optical lens **11** houses LED elements as the

Accordingly, one skilled in the art would be lead, at most, to modify the lamp 10 to increase heat dissipation of the base 18 and not the cylinder 35.

Accordingly, for these additional reasons, the rejected claims are not shown, taught or made obvious by the '678 patent and the '517 publication taken singly or in combination.

7. Claims 14-16, 20-21, 35-37, 41-42, 56-58, and 62-63 stand "rejected under 35 U.S.C. 103 (a) as being unpatentable over the '678 patent in view of the '794 patent."

It is respectfully submitted that the Examiner has failed to follow the factual inquiries set forth in *Graham v. John Deere Co* and on this basis it is requested that the Examiner withdraw this rejection.

These claims stand rejected as unpatentable over the '678 patent in view of the '794 patent.

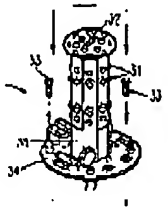
These claims all depend from base claims that are not shown, taught or made obvious by the '678 patent. The Examiner has cited the '794 patent to cover limitations that are included in these claims.

For the same reason that the base claims are not shown, taught or made obvious by the '678 patent, these claims are likewise not shown, taught or made obvious by the combination of references.

The Examiner points to the '794 patent as showing a flexible pc board which is capable of being wrapped around a cylinder.

circuit/insulating layer comprises said electrical conductors. The '794 patent, in disclosing a lighting unit in Figs. 3 - 5, including elongated member 40 comprising elongated flexible printed circuit board 10, elongated housing 42, and LEDs 18, teaches that the use of printed circuit board takes advantage of mass production processes which have been developed for automatic placement of LEDS (and the inherent printed electrical conductors – "printed" - and the required apertures for receiving the LEDs) (column 2, lines 20-29) and that printed flexible circuit board 10, being flexible, can be wrapped around cylindrical housing 42 (Abstract, "the circuit board, being flexible, is wrapped around a cylindrical housing, with LED packages being directed radially outward"). ..

However, the cylinder of the '678 patent is not a smooth walled cylinder, but rather is of polygon cross-section.



How does the Examiner propose to wrap the circuit board around the polygon cross-section? It is respectfully submitted that one skilled in the art would not create such a structure.

The Examiner states:

> it is respectfully submitted that the '678 patent does not disclose that the metal cylinder 35 is a polygon cross-section. **The metal member in FIG. 3 may look like a polygon**, but the reference discloses and claims a metal cylinder."

It is respectfully submitted that if the "metal member" looks like a polygon, it is absurd to state that the patent does not disclose that the cylinder 35 is a polygon.

FIG. 3 is the only drawing that shows an LED subassembly. That LED subassembly is clearly of polygon cross-section. No other LED subassembly is shown.

In addition, the Examiner had contended that the LEDs 31 could be mounted on a flexible printed circuit board to meet the structures claimed by Applicant. However, LEDs 31 are not described as being mounted on anything other than the sides of the metal cylinder 35. There is no discussion or teaching in the '678 patent that any printed circuit board is used

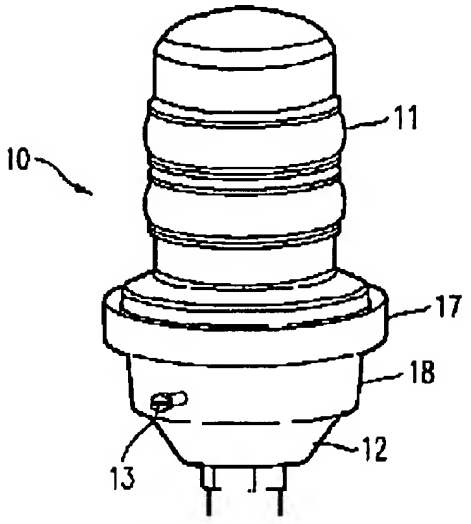
for LEDs. The only printed circuit board referenced is board 34 for the carrying the drive circuitry.

The proposed modification of the structure of the '678 patent to include a printed circuit board where none is presently used radically changes the structure of the '678 patent and there is no suggestion that mounting "high power" LEDs as described in the '678 patent on a printed circuit board, flexible or not would achieve the heat dissipation presently provided by the structure shown and described.

In addition, the Examiner states as one motivation for modifying the structure of the '678 patent:

In addition, the simple fact that the '678 patent's lamp is subjected to significant handling (column 4, lines 36-40), adds the more motivation to one of ordinary skill, in the lighting art, to change the simple tube carrying high power lighting elements with a flexible printed circuit board/insulating layer to offset for the extensive handling, as it is known that being rigid is prone to accidental breaking more often than being flexible.

However, the Examiner neglects to consider that the lamp of the '678 patent is designed as a sealed unit.



This sealed unit has a protective cover 11 which makes it unlikely that the device will be subject to handling. Accordingly, it is respectively submitted that the Examiner's motivation is not a realistic motivation.

In addition, the Examiner's rational that it is desirable to utilize a flexible printed circuit board because the "obstruction light" of the '678 patent is subjected to sufficient handling is factually incorrect.

The '678 patent clearly states that the "obstruction light may find use in and around airports, and may be placed on the top of jet blast fences, runway edges, towers, mountains, tall buildings, etc." (col. 1, lines 6-10)

The Examiner points to column 4, lines 36-40 as support of "significant handling." It is respectfully suggested that the Examiner read the cited passage. If anything, the cited passage teaches that obstruction lights are not subjected to significant handling. The cited "handling" is "wiring, installation, or removal." It is respectfully submitted that one does not "significantly handle" lights on the top of "jet blast fences, runway edges, towers, mountains, tall buildings, etc."

For these additional reasons, the claims are not shown, taught or made obvious by the '678 patent and the '794 patent taken singly or in combination.

8. Claims 19, 40, and 61 stand rejected under 35 U.S.C. 103(a) "as being unpatentable over the '900 patent for being obvious."

It is respectfully submitted that the Examiner has failed to follow the factual inquiries set forth in *Graham v. John Deere Co* and on this basis it is requested that the Examiner withdraw this rejection.

These claims depend from base claims and add further limitations. None of the base claims are shown, taught or made obvious by the '900 patent for the reasons set forth above.

Accordingly, these claims are likewise not shown, taught or made obvious by the '900 patent for the same reasons.

9. Claims 19, 40, and 61 stand rejected under 35 U.S.C. 103(a) "as being unpatentable over the '678 patent for being obvious."

It is respectfully submitted that the Examiner has failed to follow the factual inquiries set forth in *Graham v. John Deere Co* and on this basis it is requested that the Examiner withdraw this rejection.

These claims depend from base claims and add further limitations. None of the base claims are shown, taught or made obvious by the '678 patent for the reasons set forth above.

Accordingly, these claims are likewise not shown, taught or made obvious by the '678 patent for the same reasons.

CONCLUSION

It is respectfully submitted that none of the claims in the application are shown, taught or made obvious by any of the references cited taken singly or in any combination.

Reexamination and reconsideration are requested. It is further requested that the claims be allowed and the application be passed to issue. It would be appreciated to receive an early notice of allowance.

Should there be any issues that may be resolved telephonically, the Examiner is invited to call the undersigned at 602-463-2010.

Respectfully submitted,

/Donald J Lenkszus/

Donald J. Lenkszus, Attorney for Applicant
(Reg. No. 28,096)

CERTIFICATE OF TRANSMISSION

I hereby certify that this document (and any as refered to as being attached or enclosed) is being transmitted by facsimile to the United States Patent and Trademark Office on JANUARY 26, 2006.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon. /Donald J Lenkszus/

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